Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Federal-State Joint Board	)	CC Docket No. 96-45
on Universal Service	)	

GTE's COMMENTS ON COST MODELS

GTE Service Corporation and its affiliated
domestic telephone operating companies

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SUMMARY

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The proxy cost estimates should lead to estimates of what the competitive market price of the "core" service would be in each area -- reflecting the ILEC's technology and network layout -- and the auction process will capture other firms' technology or changes in the definition of universal service.

With further improvement, the CPM and BCM II models or a combination of the two could provide estimates usable as the starting point for the Federal plan; while the Hatfield model has such grave deficiencies it cannot be used for this purpose.

GTE supports the use of a unit of observation that is sufficiently small to capture differences in cost. This is necessary to target support accurately, and to ensure that the plan is sustainable and competitively neutral by limiting the heterogeneity of customers within each unit.

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GTE's COMMENTS ON COST MODELS

GTE Service Corporation and its affiliated domestic telephone operating companies ("GTE"), in response to the FCC's Public Notice DA 96-1094 (released July 10, 1996) (the "*Notice*"), submit the following comments.

1. Under GTE's proposal area cost estimates would be merely a starting point that will be superseded by operation of the auction, which will provide a means to correct estimating errors.

GTE has supported the development of estimates of universal service costs, on a geographically disaggregated basis, for use in the Federal universal service plan. In GTE's view, the purpose of such a cost estimate would be to serve as a basis for estimating what the market price for the "core" service would be in a given geographic area. Comparison of this estimated market price with the price the Carrier of Last Resort ("COLR") is required to charge would yield an estimate of the value of the market intervention imposed on the COLR. The initial level of support in each area would be based on this estimate.

When other firms enter the market in an area, and are willing to become COLRs there, the circumstances would permit an auction to be held to assign the COLR obligation, and to determine the per-customer support the COLR(s) should receive. GTE believes that, wherever auctions are possible, they will be more effective than any cost model in measuring the true value of the market intervention imposed on the COLR.

Accordingly: GTE has proposed a framework that would allow auctions to be held in each area as firms enter.[1] GTE therefore views the cost estimates for each area merely as a starting point for the Federal plan -- one that would be superseded by the results of the auction process wherever auctions are held.[2] Any cost model will estimate cost with some degree of error; the auction process will provide a means for correcting these errors over time.[3]

2. The proxy cost estimates should lead to estimates of what the competitive market price of the "core" service would be in each area -- *reflecting the* ILEC's technology and network layout -- and the auction process will capture other firms' technology or changes in the definition of universal service.

Placing the use of the cost estimates in this context helps to clarify the requirements the proxy cost model must meet. It should provide, or should be usable to develop, estimates of what the competitive market price of the "core" service would be in each area. It should reflect the technology and network layout used by the

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[1] See GTE's Comments in Response to Questions, filed in this proceeding August 2, 1996. In particular, GTE's auction proposal is set forth in the statement of Paul R. Milgrom attached thereto.

[2] The cost estimate would also be used in the auction itself the first time a given area was auctioned, since the reserve level for the auction would be based on a multiple of the cost estimate.

[3] The auction would also capture the effect of any other factors that would affect a firm's willingness to undertake the COLR obligation, such as the cost of any non-price requirements on the COLR, and the value of any complementarities with other services.

Incumbent Local Exchange Carrier ("ILEC"), since it will be used only to estimate compensation for the incumbent.

Assuming other carrier(s) wish to receive the universal service support that is associated with being a COLR in an area, they will take action that will trigger an auction there. This means that it is not necessary to adapt the model over time to reflect other firms' technology, or changes in the definition of universal service, since these will be captured automatically by the auction process.

3. With further improvement, the CPM and BCM II models or a combination of the two could provide estimates usable as the starting point for the Federal plan; while the Hatfield model has such grave deficiencies it cannot be used for this purpose.

GTE has not sponsored a proxy cost model, but has worked closely with ILECs that have developed such models. In GTE's view, none of the models yet proposed is sufficiently developed to provide estimates suitable for use as the starting point for the Federal plan. However, two of the proposed models show considerable promise. These are the Cost Proxy Model ("CPM") developed by Pacific Bell and the revised Benchmark Cost Model ("BCM II") sponsored by US West and Sprint. GTE suggests that each of these models can be further improved; it may also be possible to combine the best elements of both in a single model. GTE is working with these companies to explore these possibilities. A third model, the Hatfield model, is not suitable for use in the Federal plan.[4]

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4 For a discussion of the Hatfield model, *see* Attachment 1, the statement of Gregory Duncan.

In general, the BCM II and CPM share many characteristics. Both are engineering simulation models; both reflect the current engineering practices used by LECs in placing new equipment. Neither is an optimizing model in the sense of selecting the least-cost technology for a particular application. Neither is an estimator of the TSLRIC for the "core" service.[5] Both will be sensitive to the values of the input prices and engineering assumptions used. The primary difference between the two models is that the BCM II simulates the design of a hypothetical network to a greater degree, while the CPM is a table-driven model that does relatively little simulation within the model itself. The best balance probably lies between the two extremes these models represent.

The other major difference between the models at present is the units of observation on which they are based. The BCM II used Census Block Groups ("CBGs"), while the CPM uses "grid squares". GTE regards the choice of the optimal unit of observation to be somewhat separable from the choice of model design, since either model could be adapted to use different units.

A) Comparison of Model Results with Book Costs.

GTE has compared results of the earlier BCM I model to its actual book costs in several states. In general, the BCM I severely underestimated the current cost level. For example, on average the loop investment estimated by the BCM I is less than 25% of the observed loop investment. This is caused, in part, by the fact that BCM I does

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[5] Although Hatfield claims that its model estimates TSLRIC, that is clearly not the case. *See* Attachment 1, the statement of Gregory Duncan. In any case, it is not necessary to estimate TSLRIC in order to estimate the market price of the "core" service for universal service purposes.

not include a number of significant components of loop investment. These include drops, cross connects, and terminals. BCM I was not designed to predict cost levels, but only cost relationships across CBGs. There are other features of the design of BCM I, such as the way in which distribution plant is simulated, and the way structure costs are calculated, which cause it to underestimate costs.

The CPM model includes many of the network components omitted from BCM I. It also calculates structure costs in a way less likely to underestimate them. It therefore produces estimates which are closer to the observed cost level than those of the BCM I. However, for the state of California the CPM estimate of loop investment is only about 46% of GTE's actual investment in residential loop plant.

GTE has had only limited opportunity to run comparisons using the BCM II model. Preliminary results suggest that the BCM II produces estimates that are closer to the actual level of investment experienced by GTE. The BCM II includes network components, such as the drop, which are omitted from BCM I. BCM II also estimates distribution plant using an algorithm which is more detailed, and less likely to underestimate investment, than that in BCM I.

B) The Choice of a Unit of Observation for a Proxy Cost Model.

GTE supports the use of a unit of observation that is sufficiently small to capture differences in cost. This is necessary to target support accurately, and to ensure that the plan is sustainable and competitively neutral by limiting the heterogeneity of customers within each unit.[6]

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[6] Further, if the support calculation is based on a benchmark of some kind, averaging cost over a large area will cause the plan to underestimate the support required.

The wire center is too large a unit to satisfy this fundamental requirement. Experience with the available models suggests that there are dramatic differences in cost within each wire center, between a customer located in town close to the switch, and a customer located far from town (and, perhaps, far from other customers). These differences are often greater than one order of magnitude.[7]

There is some convenience in using a wire center as the unit of observation, since customer and switch information is generally collected by the ILEC at that level. Loop investment, however, is generally not collected at that level. The proxy model can use wire center level information, where available, since both the BCM II and the CPM estimate some costs, such as the switch and feeder costs, at that level.

The Census Block Group ("CBG") provides a standard unit that is smaller than the wire center, and for which household data are available. In most areas, the CBG is reasonably effective at distinguishing high-cost from low-cost customers. CBGs also have the advantage that they are designed by the Census Bureau to meet certain criteria. For example, they do not cross state or county boundaries, and they often skirt major natural obstacles.

However, the use of CBGs does raise certain difficulties. In rural areas, CBGs may become quite large, so that they no longer are effective in distinguishing between

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7 Some parties, such as NCTA, have attempted to minimize the importance of cost differences within the wire center. These differences are very real. The simple fact is that customers who are close to one another are cheaper to serve than customers who are far apart. It will always be possible for a firm to construct a network (a minimum spanning tree) to connect customers in and near a town center at a lower average cost than a minimum spanning tree that must also include more distant, and more dispersed, customers. The smaller network will be able to serve customers generating the bulk of the revenue available in the wire center area.

high- and low-cost customers. In these areas, the unit of observation becomes too large. Since the BCM I contained no information below the CBG level, the level of abstraction on which the model simulation was based became quite high. The model had to assume that customers were uniformly distributed, when in fact they are often clustered in certain parts of the CBG. The BCM II mitigates this problem to some extent by bringing in additional information about the area of the CBG accessible by road, and about the number of housing lots in the CBG. The model also does not know anything about the shape of the CBG, and so must assume that it is a square of a given area. Real CBGs can be quite irregular in shape. Particularly as the CBG becomes large, this means that the model locates equipment at points within this abstract area that may not correspond closely to the actual locations of customers in the real CBG. This difficulty is not addressed by the new information added to BCM II.

In urban areas, CBGs must also be used with care, since they are based only on household data. They do not capture business customers, who may represent the vast majority of subscribers in an urban area. Both the BCM and the CPM make an effort to adjust for the presence of business lines; however, both do so using average relationships between the number of residence lines and the number of business lines. Unfortunately, this relationship varies widely across areas. GTE will suggest *infra* a method of developing business and residence line counts which may help to mitigate this problem.

The CPM uses as its unit of observation the grid square, which is an area encompassed by one one-hundredth of a degree of longitude and latitude. Data on households within each grid square are available from a commercial vendor. An estimate of the daytime population of each grid square is also available. Since grid squares are constant in size, while CBGs vary according to the density of population, grid squares are smaller that CBGs in rural areas, and generally larger in urban ones.[8] The grid squares thus provide a source of more detailed information for the rural areas where CBGs tend to be too large. In the urban areas of the highest density, where grid squares are larger than CBGs, the costs are also likely to be more homogeneous, so that the slightly larger unit does not cause a serious loss of accuracy.

The small size of the grid squares allows the model to work at a finer level of granularity, and to better capture the locations of clusters of customers, particularly in rural areas. The regular shape of the grids also matches the assumptions of the models. However, because the grid squares are arbitrary units of geography, they march through things that CBGs do not, such as state lines and rivers.

Another possible unit of observation is the Census Block ("CB"), the census unit of which CBGs are composed. It appears that the commercial data on households for the grid squares are largely derived from census data at the CB level. This suggests that it might be more useful to rely on CBs to provide more granular information within each CBG. On the other hand, it is not clear whether an alternative measure of business demand is available for use with CBs.

GTE is working with other companies to assess the use of more detailed data from either grid squares or CBs to enhance the accuracy of the proxy cost estimates. It

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[8] Grid squares are not strictly constant in size, since the length of one degree of latitude increases for squares farther from the equator. Squares in northern California are slightly taller than those in southern California.

may prove useful to adopt a hybrid approach, in which CBGs are used in higher density areas, and grid squares or CBs in lower density areas.

Certain administrative aspects of the plan will be affected by the choice of the unit of observation. It is clear that CBGs will not conform to the boundaries of wire centers. It is not necessary for the plan to be based on current ILEC units; however, the mismatch between CBGs and wire centers does create some concerns. First, some components of the cost, such as switching and feeder, are estimated at the wire center level in all of the proxy models. If an area is associated with the wrong wire center, an error may be introduced into the cost estimate. Second, the unit of observation may cross the boundary between the current serving areas of two ILECs. In such a case, in order to undertake the COLR obligation for that CBG, both ILECs would be obliged to expand their current serving area. While there is no reason why one ILEC could not offer service in another's area (and many will) it would appear reasonable for the plan to be implemented in such a way that it at least accommodates the current serving areas.

Both of these concerns could be mitigated by splitting CBGs. This could be done where a CBG crosses a serving area boundary, or where the CBG is served by two different wire centers with significantly different cost levels. The data from the smaller units (grid squares or CBs) could be used for this purpose. Another task that will be necessary in order to implement the new plan with any of these units will be the assignment of the current ILEC customers to the appropriate area. Current ILEC records do not contain this information.

C) Use of Terrain Variables.

All of the models presented to the Commission employ the same adjustment factors for differences in terrain and soil type. These were developed for use in BCM I. The BCM II adds an additional slope variable. In GTE's view, the usefulness of terrain variables at the CBG level is limited, since the model can only capture an average value for each variable. Depending on the actual topography in each area, differences in average terrain may or may not affect cost. For example, in one mountainous area, all of the customers may actually be located on a valley floor, and the mountains may not affect the cost of placing facilities to reach them. In another area with the same average measurements, it may be necessary to place facilities in difficult terrain to reach the customers.

The use of smaller areas, such as grid squares or CBs, might create an opportunity to refine the terrain variables to make them more useful. The current terrain variables were obtained from a different data source, and are available in units (polygons) which are different from CBGs. The BCM's sponsors processed these data to develop the average terrain variables in the BCM. It remains to be seen whether it is possible to do similar processing to develop terrain factors at the grid square or CB level.[9]

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[9] The data from which the terrain variables are processed are based on a sample; in some areas the sample observations are relatively sparse.

D) Economic Considerations in Model Design.

Several considerations are common to the design of proxy cost models. They include the definition of the cost to be measured, the way the models address growth and uncertainty, and the way demand is measured.

As noted *supra*, none of the models on offer actually measure TSLRIC costs. They do not compare a cost minimizing outcome with and without a service or other output of the firm. Indeed, many of the firm's outputs are not considered by the models at all.[10] Others are partially considered, such as the demand for business lines. This is not in itself a concern, since there is no obvious reason why it is necessary to measure TSLRIC in order to estimate the market price of the "core" service. A market firm would establish this price by applying a markup over incremental cost to cover the total cost of the firm; the size of this markup would depend (in equilibrium) on the level of the firm's costs, and on demand characteristics. The markup so determined would cover the service-specific, but non volume-sensitive costs that a TSLRIC study would estimate. Alternatively, if a TSLRIC estimate were used, the estimated markup would be less. But the answer -- the estimate of the market price -- is unlikely to be different.

What is different about the use of incremental models in this context is that parties are relying on <u>incremental</u> models to estimate cost <u>levels</u>. Generally, incremental models are used to produce information about the slope of the cost function near the point where the firm is operating. This involves only a limited amount

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10 This might be appropriate if these other outputs, such as access, toll usage, and vertical services, were separable from the "core" service. However, this does not appear to be a reasonable assumption

of extrapolation; the region to the left of the starting point is not modeled accurately, nor need it be. The results are generally used to make determinations about relative prices; information on the overall cost level of the firm comes from accounting data. But TSLRIC models attempt to estimate a forward-looking total cost for the firm under an alternative hypothesis; this represents a new level of extrapolation, and a much higher risk of error. This risk is particularly great, since the service being modeled is the largest single output of the firm. If the proxy cost models, which are not TSLRIC models, are to be used for setting price levels, then care must be taken to avoid error in estimating the level of cost. This can be done by bringing in to the process additional information, from accounting sources, on cost levels, or by carefully verifying the cost levels produced by the models against real data.[11] In any event, as GTE has explained in its previous comments, the average level of cost of existing capacity in the industry is relevant in the determination of the average industry price.

Further, a reasonable estimate of forward-looking cost should recognize that the problem the firm faces is one of optimizing effiency over some planning horizon. That future will be characterized by growth, by shifts in the composition of demand (about 20% of GTE's customers move within a given year), and by uncertainty. The firm must optimize its investments over time when investments are lumpy, the fixed cost of placing equipment is high, and both prices and capabilities of equipment are changing rapidly. In this context, it is optimal for the firm to choose some optimal interval over

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[11] For additional discussion of this point, see attached statement of Gregory Duncan.

which to add increments of capacity; this is usually done by establishing a maximum, or objective, level of utilization, which, when reached, triggers the next capacity increment.

None of the models optimize fully over this time dimension. It is inappropriate to assume that the objective level of utilization will be maintained over time, since by definition it represents an upper bound; the optimal realized utilization over time will be lower. The BCM and CPM models represent this outcome to some extent by allowing for it in the fill factors they assume; the Hatfield model assumes utilization rates which are not only not achievable, but are not actually cost-minimizing over time. Utilization is also affected by indivisibilites, or "lumpiness" in the equipment being used. For example, if a cable must be run down a street to serve three subscribers, and the minimum cable size that can reasonably be placed is 25 pairs, then the indivisibility of the cable will lead to a low utilization rate. Further, the placement and structure costs will not vary markedly with the size of the cable (except perhaps for extremely large cable sizes); hence the cost of running a structure past the three houses is also largely indivisible. The models recognize this to vaying degrees: The CPM and BCM II to some degree, and the Hatfield model barely at all. Finally, the least-cost network that can be placed to serve a static demand at a given time is not the same network that would result from a dynamic optimization over time, in which capacity would necessarily be added in increments. The CPM recognizes this fact to some degree because its inputs incorporate, to a greater degree than the other models, the pattern of investment in the current network.

E) Design Considerations -- CPM Model.

GTE has thoroughly reviewed the CPM model, and has recommended certain changes to the model in the context of the universal service proceeding in California.

As noted supra, the CPM and BCM models differ in the amount of simulation that is done within the model itself. The loop characteristics, in particular, are developed through a combination of input tables and simple algorithms. In the BCM, the emphasis is on the algorithms, while in the CPM the emphasis is on the tables. In the BCM, the algebra used to develop loop lengths and cable size is contained in the model, while in the CPM this information is developed externally, based on information specific to Pacific Bell, and reflected in unit cost tables which are input to the model.

GTE believes that the best way of developing this information is some combination of the CPM and BCM II approaches. The CPM, by taking more input parameters, is able in principle to more closely reflect actual network design. However, the preparation of these inputs necessarily involves the processing of more basic inputs, such as costs for trenching, conduit materials, cutting and replacing of concrete, manholes, placing conduit and placing cable in the conduit. In order to develop higher level input costs for the CPM, these elements must be combined using assumptions concerning the basic design of the network and the practices network engineers will follow in placing equipment. These assumptions, such as the cable sizes used on feeder routes, are implicit in the unit costs that appear in the CPM.

There is no mechanism within the CPM itself that assures that the assumptions built into all of these inputs reflect a consistent network design. For example, the unit cost for feeder may assume a given cable size, and allow for a separate structure for each cable. In a real office, however, several such cables may share a route, so that the structure cost per cable is less than the cost allowed for in the development of the unit cost. The unit cost estimate should be consistent with an assumption regarding the number of separate routes that would be established for an office of a given size.

Further, the process of developing the unit costs for the CPM has been internal to Pacific Bell, and is therefore difficult for other parties to evaluate, to replicate, or to extend to other companies.

To address these concerns, GTE has proposed in California that the unit cost inputs for the CPM be developed using an external process. This process would take as its own inputs a simple set of assumptions about the network design in the wire center, and a limited set of low-level unit cost values. By modeling the wire center network using this information, the outboard model would create a consistent set of unit cost values which would then be used to populate the unit cost tables in the CPM. The CPM would then run normally, so that this proposal requires no change to the CPM itself. GTE has already developed this outboard process for the unit costs associated with both feeder and distribution plant in the CPM.

This process will allow the unit costs to be developed through a process that is open, and relatively simple. It can be used to generate inputs which are suitable for carriers other than Pacific Bell. It will ensure that the unit costs are consistent with one another, with an assumed network design, and with the size of the wire center being modeled.[12] This process brings to the CPM some of the advantages of the simulation

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12 GTE also proposes, infra, a modification to the CPM which groups wire centers more accurately by size. The average size of wire centers in each group then serves as one of the inputs to the outboard process described here, thereby ensuring that the resulting unit costs match the size of the wire center.

process in the BCM, while retaining the richness of the parameter set in the CPM.[13] Further, in populating the inputs of the outboard model, GTE has used, wherever possible, prices quoted to GTE by an outside vendor.[14]

The second modification GTE proposes to the CPM involves the grouping of wire centers into zones for purposes of calculation. As designed, the CPM groups wire centers into zones on the basis of the average density of the grid squares assigned to that wire center. The calculation of switching and feeder costs is then driven by the cost inputs associated with that zone. GTE submits that the size of the switch, and of the feeder routes coming out of the office, are more directly related to the number of lines served in that wire center. The other existing models, such as the BCM I and BCM II, base their estimates of these costs on the size of the wire center. We know how many lines there are in each wire center, but the CPM makes no use of this information. Examination of the California data show that the CPM density zones do not do a good job of distinguishing between wire centers of different sizes.

GTE proposes that the wire centers in the CPM should be grouped into zones on the basis of the number of lines in each wire center, rather than on the basis of density. Once this has been done, the actual cost calculations in the model would be unchanged. As described supra, the outboard process GTE has proposed would ensure that the unit costs used for each zone were consistent with the average wire

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[13] Note that the BCM II now uses an outboard module to process user inputs to the model.

[14] GTE has already provided these input values to parties in California, and would be willing to make them available in this proceeding as well.

center size in that zone. GTE has already modified a version of the CPM, working with Pacific and with Indetech, to implement this proposed change.

GTE has proposed that the placement of pair gain devices in the CPM be set to ensure that such devices are no farther than 12,000 feet from the customer. This is consistent with GTE's own network practices.

GTE also suggests that changes should be made in the way the number of lines to be provisioned are estimated in the CPM. Currently, this is done by adding the count of households in each grid square to an estimated number of business lines. The business lines are estimated by multiplying the daytime population reported for the grid square by a statewide factor which represents the average ratio between business lines and daytime population.

There is no reason to expect that this procedure will estimate the number of lines accurately. GTE proposes a different approach that makes the best combined use of the grid square data and the company's own records. There is no need to aggregate grid square information to estimate the number of lines demanded in each wire center; the ILEC has this information today, by business and residence. GTE proposes that this information should simply be used at the wire center level. In order to develop information at the grid square level, GTE proposes that the wire center information should be combined with the data from the commercial data base.

To estimate the number of residence lines in each grid square, GTE proposes that the total number of residence lines in the wire center, from the company's records, should be distributed among the grid squares associated with that wire center, using the household count in each grid square as the distributing factor. Similarly, GTE suggests that the total number of business lines in each wire center should be distributed among the grid squares in that wire center, using the daytime population reported for each grid square as the distributing factor.

The wire center level information is more reliable than the sum of the grid square data in each wire center; GTE's proposal would force the sum of the grid square counts to match these totals at the wire center level. In particular, GTE is concerned that developing business lines based on aggregate ratios, as all of the current models do, will not capture differences in the concentration of business lines. In an area dominated by information-intensive businesses, such as a downtown financial district, there will be more than the average number of lines relative to the daytime population; in other areas there will be less. The wire center business line data will capture these differences. At the same time, the wire center data do not tell us how the lines are distributed within the wire center area; the grid square data is the best information we have on that. GTE's proposal therefore puts each piece of available data to its best possible use.

GTE has also suggested that the switching costs in the CPM be modified, for two reasons. First, the costs currently used do not fully capture the difference in unit costs between large and small switches. Second, the level of the costs used by Pacific are not representative of those experienced by other companies, because of unique contracts Pacific has negotiated with its switch suppliers.

GTE is also concerned that most of the expenses in the CPM are reflected as constant amounts per line, regardless of where the line is located. While this may be reasonable for many expenses, such as billing, it is probably not reasonable for expenses such as maintenance, which is likely to be more costly in rural areas than in urban ones.

F) Design Considerations -- BCM Model.

GTE has already commented on its concerns with the BCM I model. Chief among these are its use of multiplicative factors to drive most of its costs as a function of materials costs; the incorrect specification of structure costs as a function of cable size; and the distribution plan algorithm. Because the BCM I assumes only two distribution routes for each CBG, if effectively assumes away any indivisibilities in distribution plant. This causes the model to place 400 pair cable in places that are actually likely to be served by 25 pair cable. When the model divides the cost of the route by the number of customers in the CBG, it effectively assumes that one can dig one four hundredth of a trench. Many of these concerns have been addressed in the BCM II model, which has a fundamentally different structure. However, these concerns are worth noting here because they are still contained in the Hatfield model, which is still based on BCM I. To GTE's knowledge, none of the additions or modification made by Hatfield address these fundamental concerns; to the contrary, some of Hatfield's assumptions appear to be designed to exploit the sensitivity of the BCM I to changes in such items as fill factors, cable costs, and discounts -- particularly if the corresponding changes to other factors are not made, as the BCM authors intended.

BCM II adds information on roads in each CBG, to help it determine the relevant area to be modeled more accurately. It has a more detailed algorithm for distribution plant, which allows it to model the actual sizes of distribution facilities more accurately. It has largely eliminated the multiplicative cost factors which were a weakness of BCM I.

GTE has rune some preliminary tests of BCM II which suggest that it does a better job of predicting actual costs than BCM I did. GTE has also experimented with using its own vendor quotes to develop unit cost inputs for the BCM II, in place of those supplied by the BCM II sponsors.

Given the limited time GTE has had to analyze BCM II, it would be premature to propose any specific changes in the model, as GTE has proposed changes in the CPM. In general, however, GTE believes that the BCM, in contrast to the CPM, still relies too much on simulation of network parameters within the model. In some cases, a false sense of precision is created when a very detailed simulation is based on very sparse data. Nonetheless, GTE finds the BCM II to be a significant improvement, and looks forward to working with US WEST and Sprint to suggest further modifications. These might take the form of providing the model with more detailed input data -- either in the form of grid square or CB data, or in the form of more detailed information on the competition of the network being modeled.

G) Jurisdictional Nature of the Models.

As the Commission has noted, all of the existing proxy models examine the cost of the "core" services on a total service, unseparated basis. GTE believes that this is the appropriate basis on which to model universal service costs for the Federal plan. The plan should be based on the total cost of the service, compared to the rate the COLR is allowed to charge. None of this needs to be done on a jurisdictional basis. The Commission can determine what portion of this amount to support through the Federal plan by choosing an appropriate level of the Federal affordability benchmark. The question of jurisdiction should only arise when it comes to applying the funding received under the plan toward offsetting reductions in rate which are genrating suppor today. Funds for this purpose should be directed to the state or interstate jurisdiction, depending on whether the rates being reduced are state or interstate in nature.

Respectfully submitted,

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Attachment 1 to
GTE's Comments on Cost Models

A Critique of the Hatfield Model

by

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